



Department of Public Utilities
Northwest River Water Treatment Plant
3550 S. Battlefield Boulevard
Chesapeake, VA 23322
Tel: (757) 382-3550
Fax: (757) 421-4483

October 4, 2013

Mr. Mark Sauer, Water Permit Manager
DEQ – TRO Water Permits Section
5636 Southern Blvd.
Virginia Beach, VA 23462

RE: VPDES Permit No. VA0091405
Lake Gaston Water Treatment Plant, Chesapeake, VA

Dear Mr. Sauer:

The City of Chesapeake is hereby submitting the following documents for the renewal of VPDES Permit No. VA0091405 for the Lake Gaston Water Treatment Plant (LGWTP):

1. Form 1 – including topographic map of the LGWTP and location of Outfall 001
2. Form 2C
3. Permit Maintenance Fee Information Form
4. Authorization to Bill Form (previously submitted electronically)
5. VPDES Permit Application Addendum
6. LGWTP Solids Handling
7. Waiver application for dioxin
8. LGWTP O&M Narrative – including a copy of the current VPDES permit
9. Supporting documents – analytical data and flow calculations

We are submitting these documents electronically and request confirmation from your office that you received them. Should you need more information or have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Violee B. DeLuna".

Violee B. DeLuna
Water Quality Supervisor

cc: William J. Meyer, Jr., P.E., BCEE, Interim Utilities Director
A. Craig Maples, Water Resources Administrator
Robert Smithson, DEQ – TRO Water Permits Section

Attachments

VPDES Permit Application Addendum

1. Entity to whom the permit is to be issued: Lake Gaston Water Treatment Plant

Who will be legally responsible for the wastewater treatment facilities and compliance with the permit? This may or may not be the facility or property owner. City of Chesapeake

2. Is this facility located within city or town boundaries? (Y) / N

3. Provide the tax map parcel number for the land where the discharge is located. 0210000000350

4. What is the design average effluent flow of this facility? 0.600 MGD

For industrial facilities, provide the max. 30-day average production level, include units: _____

In addition to the design flow or production level, should the permit be written with limits for any other discharge flow tiers or production levels? Y / (N)

If "YES", please identify the other flow tiers (in MGD) or production levels: _____

Please consider the following questions for both the flow tiers and the production levels (if applicable): Do you plan to expand operations during the next five years? Is your facility's design flow considerably greater than your current flow?

5. Nature of operations generating wastewater: Water treatment plant primarily engaged in distributing water for sale to domestic, commercial, and industrial users. Wastewater streams including membrane concentrate, Mn contactor backwash, strainer backwash, neutralized spent cleaning solution, sumps, and septic tank discharge to the plant waste basin.

 % of flow from domestic connections/sources
Number of private residences to be served by the treatment works: 113,091 (July 2013)

 % of flow from non-domestic connections/sources

6. Mode of Discharge: ✓ Continuous Intermittent Seasonal
Describe frequency and duration of intermittent or seasonal discharges:

7. Identify the characteristics of the receiving stream at the point just above the facility's discharge point:


 Permanent stream, never dry
 Intermittent stream, usually flowing, sometimes dry
✓ Ephemeral stream, wet-weather flow, often dry
✓ Effluent-dependent stream, usually or always dry without effluent flow
 Lake or pond at or below the discharge point
 Other _____

8. Approval Date(s):
O & M Manual January 2006 Sludge/Solids Management Plan June 21, 2011

Have there been any changes in your operations or procedures since the above approval dates? Y / (N)

9. Do you intend to sign up for e-DMR, the DEQ's electronic Discharge Monitoring Reporting program?

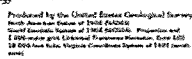
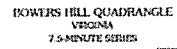
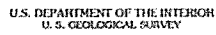
 Yes ✓ No; if not, why? Already submitting electronic DMR since inception.

FORM 1 GENERAL		 U.S. ENVIRONMENTAL PROTECTION AGENCY GENERAL INFORMATION Consolidated Permits Program <i>(Read the "General Instructions" before starting.)</i>		I. EPA I.D. NUMBER		13 14 15 D	
LABEL ITEMS I. EPA I.D. NUMBER III. FACILITY NAME V. FACILITY MAILING ADDRESS VI. FACILITY LOCATION		PLEASE PLACE LABEL IN THIS SPACE		GENERAL INSTRUCTIONS If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent (the area to the left of the label space lists the information that should appear), please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI (except VI-B which must be completed regardless). Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.			
II. POLLUTANT CHARACTERISTICS							
INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.							
SPECIFIC QUESTIONS				SPECIFIC QUESTIONS			
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)				B. Does or will this facility (either existing or proposed) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)			
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)				D. Is this a proposed facility (other than those described in A or B above) which will result in a discharge to waters of the U.S.? (FORM 2D)			
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)				F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)			
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)				H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)			
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)				J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)			
III. NAME OF FACILITY							
1 SKIP LAKE GASTON WATER TREATMENT PLANT							
IV. FACILITY CONTACT							
A. NAME & TITLE (last, first, & title)						B. PHONE (area code & no.)	
2 MAPLES, CRAIG A. - WATER RESOURCES MGT. ADMINISTRATOR						(757) 382-3550	
V. FACILITY MAILING ADDRESS							
A. STREET OR P.O. BOX							
3 3550 BATTLEFIELD BLVD. S.							
B. CITY OR TOWN							
4 CHESAPEAKE							
C. STATE							
VA							
D. ZIP CODE							
23322							
VI. FACILITY LOCATION							
A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER							
5 5416 WEST MILITARY HIGHWAY							
B. COUNTY NAME							
C. CITY OR TOWN							
6 CHESAPEAKE							
D. STATE							
VA							
E. ZIP CODE							
23321							
F. COUNTY CODE (if known)							

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)									
A. FIRST					B. SECOND				
7 4952 (specify)					7 (specify)				
15 16 - 19 WATER TREATMENT PLANT					15 16 - 19				
C. THIRD					D. FOURTH				
7 (specify)					7 (specify)				
15 16 - 19					15 16 - 19				
VIII. OPERATOR INFORMATION									
A. NAME								B. Is the name listed in Item VIII-A also the owner?	
8 CITY OF CHESAPEAKE - PUBLIC UTILITIES								<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
15 19								55 56	
C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box: if "Other," specify.)								D. PHONE (area code & no.)	
F = FEDERAL		M = PUBLIC (other than federal or state)		M (specify) MUNICIPALITY		A		(757) 382-3550	
S = STATE		O = OTHER (specify)		56		15 16 - 18 19 - 21 22 - 26			
P = PRIVATE									
E. STREET OR P.O. BOX									
PO BOX 15225									
26									
F. CITY OR TOWN									
B CHESAPEAKE									
15 16									
G. STATE				H. ZIP CODE		IX. INDIAN LAND			
VA				23328		Is the facility located on Indian lands?			
						<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
40 41				42 43 - 51		52			
X. EXISTING ENVIRONMENTAL PERMITS									
A. NPDES (Discharges to Surface Water)					D. PSD (Air Emissions from Proposed Sources)				
9 N VA0091405					9 P 550-00186				
15 16 17 18					30 15 16 17 18				
B. UIC (Underground Injection of Fluids)					E. OTHER (specify)				
9 U VAS5R211MCHE					9 VPA01073 (specify) NORTHWEST RIVER SLUDGE SITE PERMIT				
15 16 17 18					30				
C. RCRA (Hazardous Wastes)					E. OTHER (specify)				
9 R					9 VA0088404 (specify) NORTHWEST RIVER WATER TREATMENT PLANT - VPDES PERMIT				
15 16 17 18					30				
XI. MAP									
Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.									
XII. NATURE OF BUSINESS (provide a brief description)									
MUNICIPAL WATER TREATMENT PLANT PRIMARILY ENGAGED IN DISTRIBUTING WATER FOR SALE TO DOMESTIC, COMMERCIAL, AND INDUSTRIAL USE. WASTEWATER STREAMS INCLUDING MEMBRANE CONCENTRATE, STRAINER BACKWASH, NEUTRALIZED CLEANING SOLUTION, SUMP PUMPS, AND SEPTIC TANK DISCHARGE ARE TREATED ON SITE WITH SLUDGE THICKENING AND CENTRIFUGE DEWATERING. THE CENTRATE IS RETURNED TO THE SLUDGE THICKENER. THE SLUDGE THICKENER OVERFLOW ALONG WITH MANGANESE CONTACTOR BACKWASH WASTE IS SENT TO THE PLANT WASTE BASIN FOR FLOW EQUALIZATION AND FURTHER SOLIDS SEPARATION. PLANT EFFLUENT PUMPS CONVEY THE LIQUID FROM THE PLANT WASTE EFFLUENT BASIN TO OUTFALL 001, AN UNNAMED TRIBUTARY TO GOOSE CREEK. THE PLANT EFFLUENT IS DECHLORINATED AND AERATED BEFORE IT IS DISCHARGED TO OUTFALL 001.									
XIII. CERTIFICATION (see instructions)									
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.									
A. NAME & OFFICIAL TITLE (type or print)					B. SIGNATURE			C. DATE SIGNED	
A. CRAIG MAPLES - WATER RESOURCES MANAGEMENT ADMINISTRATOR					C. Maples			10-2-13	
COMMENTS FOR OFFICIAL USE ONLY									
C									
15 16									

*Topographic Map of the Lake Gaston
Water Treatment Plant*

[illegible]

EXPERIMENTAL INVESTIGATION OF THE
EFFECTS OF VIBRATION ON THE
PERFORMANCE OF MAN

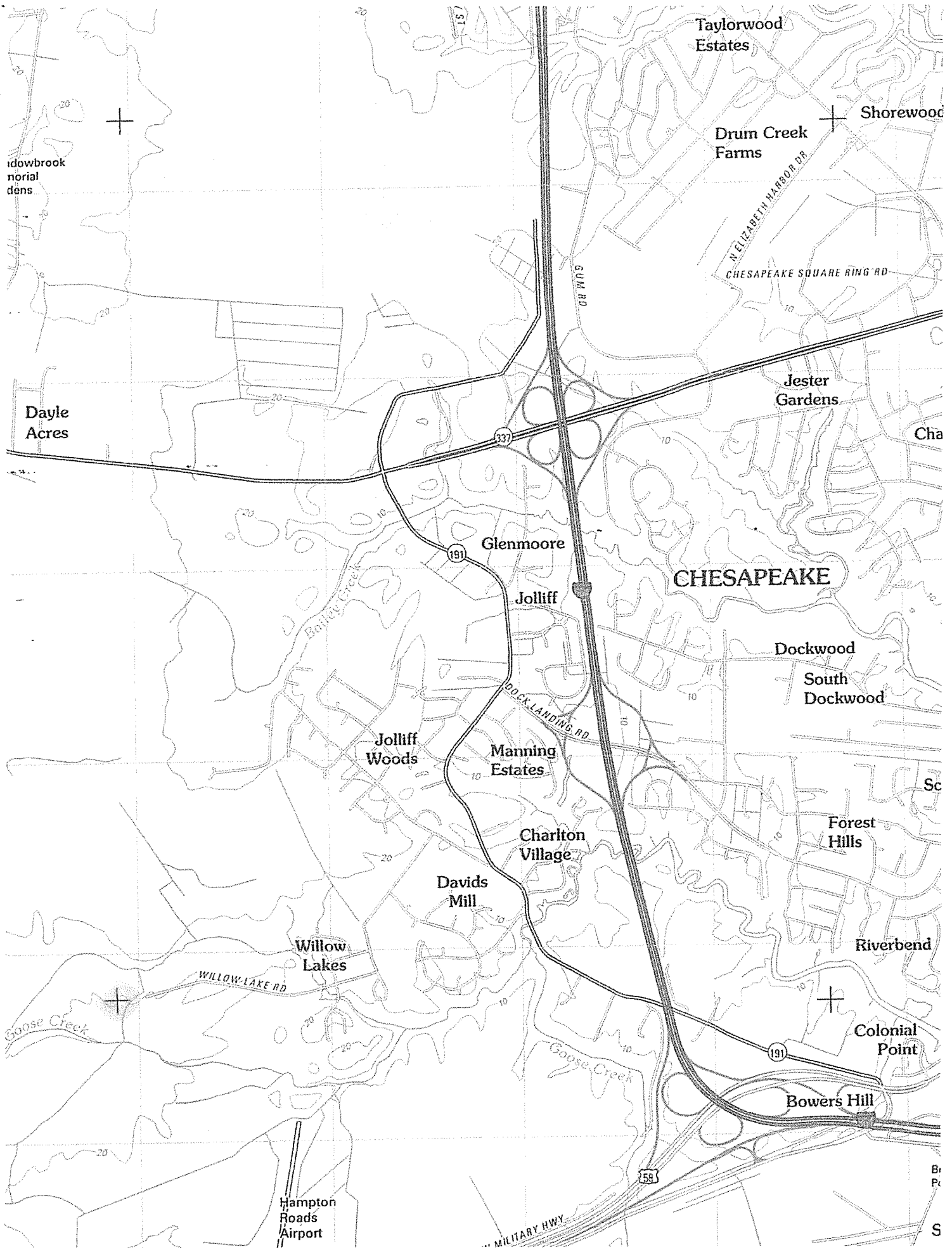


Harper Character	Robinson Personality	Smith World
Thompson Character	Johnson Personality	White World
Miller Character	Lee Personality	Clark World

ROAD CLASSIFICATION



BOWERS HILL, VA
2011



idowbrook
norial
dens

Dayle
Acres

Taylorwood
Estates

Drum Creek
Farms

Shorewood

N ELIZABETH HARBOR DR

CHESAPEAKE SQUARE RING RD

Jester
Gardens

Cha

Glenmoore

Jolliff

CHESAPEAKE

Dockwood

South
Dockwood

Jolliff
Woods

Manning
Estates

Charlton
Village

Davids
Mill

Willow
Lakes

WILLOW LAKE RD

Forest
Hills

Riverbend

Colonial
Point

Bowers Hill

Hampton
Roads
Airport

MILITARY HWY

Br
Pe

S

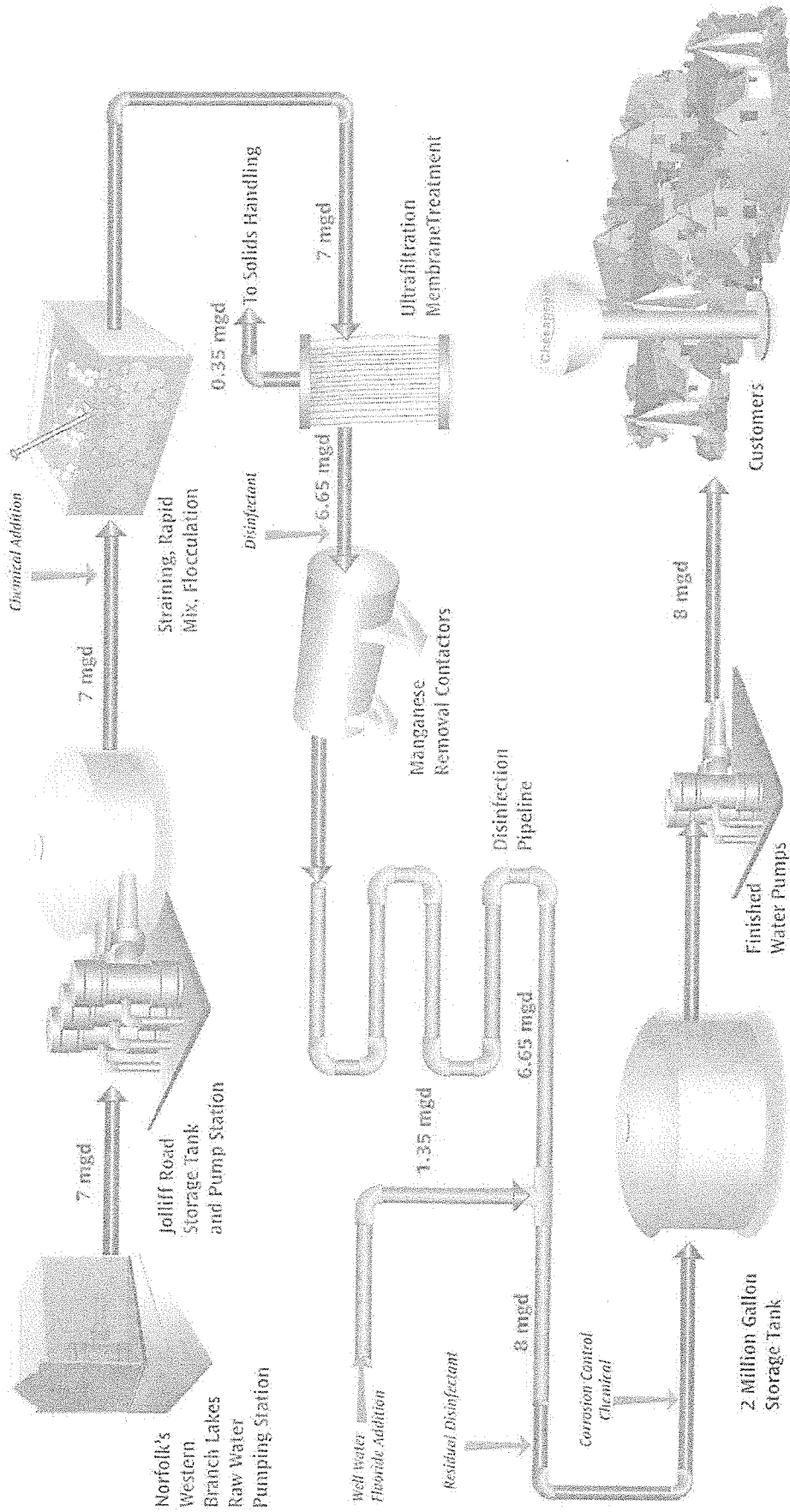
Location of the LGWTP Outfall 001

LGWTP Outfall 001





Lake Gaston Water Treatment Plant Process



EPA I.D. NUMBER (copy from Item 1 of Form 1)

VA0091405

Form Approved.
OMB No. 2040-0086.
Approval expires 3-31-98.

Please print or type in the unshaded areas only.

FORM
2C
NPDESU.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURE OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (list)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (name)
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	
001	36	46	32.865	76	27	27.353	Unnamed tributary to Goose Creek

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO. (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	Membrane Concentrate	0.350 MGD	Approximately 5% of the reject from each membrane train is discharged continuously to the Sludge Thickener (ST). Overflow from the ST is discharged to the Plant Waste Basin (PWB).	4-A	
	Strainer Backwash Waste	0.072 MGD	Strainer is used to reject larger particles from the raw water such as leaves, debris, and anything greater than 400 microns; it is backwashed at a 5-minute interval for 3 mins.	1-T	4-A
001	Manganese Contactor Backwash Waste	0.011 MGD	Mn Contactors are backwashed based on time or pressure differential. They are backwashed once per week for the two contactors. Waste backwash water containing particulate manganese flows by gravity to the PWB, where the particles are settled out of solution.	2-B	4-A
			Supernatant from the PWB is discharged to the Effluent Pump Station.		
001	Spent Cleaning Solution	0.008 MGD	Each of the four membrane trains requires cleaning every 30-days with dilute conc. of citric acid and sodium hypochlorite. The spent cleaning solutions are neutralized with sodium hydroxide and/or sodium bisulfite. Following neutralization, the solution is pumped to the ST where solids are settled out of solution. Overflow from the ST is discharged to the PWB.	2-E	2-K
			Basins or trains are drained every other day to deconcentrate the water going to the membranes.		
001	Basin Drain	0.060 MGD	Water from draining the basins goes directly to ST.	1-U	4-A
	Sanitary Decant	300 gallons/day (estimate)	The effluent from the septic tank is conveyed through a grinder and then to the ST. The flow discharged from the septic tank is disinfected with sodium hypochlorite. The thickened residuals removed from the bottom of the ST are dewatered in a centrifuge and hauled to the City's permitted disposal site. The overflow from the ST is sent to the PWB.	1-M	2-K
001					4-A
	Chemical Containment Areas, sumps in the membrane building and	0.011 MGD	Rainwater from individual containment areas and outside troughs is pumped manually to the PWB.	4-A	
001		46.35" total rainfall (2012)	In the future a valve will be installed to divert the water to the ST, then to the centrifuge before it goes to the PWB. These containment areas may occasionally contain trace amounts of dilute chemicals resulting from routine storage & handling activities. Water from the sumps originates from in-line process analyzers & floor drains, also goes to the PWB.		
	stormdrains.	0.61" average rainfall (2012)			
001			Flows come from the sample lines inside the laboratory and discharge directly to the PWB.	4-A	
	Sump from the Lab	0.009 MGD			

OFFICIAL USE ONLY (effluent guidelines sub-categories)

VA0091405

Please print or type in the unshaded areas only.

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C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?								
<input checked="" type="checkbox"/> YES (complete the following table) <input type="checkbox"/> NO (go to Section III)								
1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW (list)	3. FREQUENCY		4. FLOW				C. DURATION (in days)
		a. DAYS PER WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RATE (in mgd)		B. TOTAL VOLUME (specify with units)		
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
001	Manganese Contactor Backwash		12	0.010	0.016	0.218 MG	0.327 MG	1
	Neutralized Spent cleaning Solution		12	0.008	0.012	0.240 MG	0.360 MG	1

III. PRODUCTION			
A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?			
<input type="checkbox"/> YES (complete Item III-B) <input checked="" type="checkbox"/> NO (go to Section IV)			
B. Are the limitations in the applicable effluent guideline expressed in terms of production (or other measure of operation)?			
<input type="checkbox"/> YES (complete Item III-C) <input checked="" type="checkbox"/> NO (go to Section IV)			
C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.			
1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS (list outfall numbers)
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	
N/A	N/A	N/A	N/A

IV. IMPROVEMENTS					
A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operations of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.					
<input type="checkbox"/> YES (complete the following table) <input checked="" type="checkbox"/> NO (go to Item IV-B)					
1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
	a. NO.	b. SOURCE OF DISCHARGE		a. REQUIRED	b. PROJECTED
N/A	N/A	N/A	N/A	N/A	N/A

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.					
<input type="checkbox"/> MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED					

EPA I.D. NUMBER (copy from Item 1 of Form 1)

VA0091405

CONTINUED FROM PAGE 2

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding – Complete one set of tables for each outfall – Annotate the outfall number in the space provided.

NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
Not required.			

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ YES (list all such pollutants below)☒ NO (go to Item VI-B)

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ YES (identify the test(s) and describe their purposes below)

☐ NO (go to Section VIII)

Chronic and Acute Toxicity Tests for Pimephales promelas and Ceriodaphnia dubia conducted on the following dates:

01/24/2011, 01/26/2011, and 01/28/2011
04/25/2011, 04/27/2011, and 04/29/2011
10/17/2011, 10/19/2011, and 10/21/2011
03/12/2012, 03/14/2012, and 03/16/2012
09/11/2013, 03/13/2013, and 03/15/2013

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ YES (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)

☐ NO (go to Section IX)

A. NAME	B. ADDRESS	C. TELEPHONE (area code & no.)	D. POLLUTANTS ANALYZED (list)
Hampton Roads Sanitation District Central Environmental Laboratory	1432 Air Rail Avenue Virginia Beach, VA 23455-3002	757-460-4205	Pollutants listed in Part A except TSS, pH and Temp. Pollutants listed in Part B except Color, Total Chlorine, and Radiological. Pollutants listed in Part C.
GEL Laboratories, LLC	2040 Savage Road Charleston, SC 29407	843-769-7390	Radioactivity: Total alpha, Total Beta, Total Radium, and Radium 226. Bromide

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE (type or print)	B. PHONE NO. (area code & no.)
A. Craig Maples - Water Resources Management Administrator	(757) 382-3550
C. SIGNATURE	D. DATE SIGNED
<i>C. Maples</i>	10/14/13

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (use the same format) instead of completing these pages.
SEE INSTRUCTIONS.

EPA I.D. NUMBER (copy from Item 1 of Form 1)
VA0091405

V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)												OUTFALL NO. 001	
PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.													
1. POLLUTANT	2. EFFLUENT						3. UNITS (specify if blank)		4. INTAKE (optional)		b. NO. OF ANALYSES		
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION		(2) MASS	
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS							
a. Biochemical Oxygen Demand (BOD)	<2	0	NA	NA	NA	NA	1	mg/L	lbs.	NR	NR	NR	
b. Chemical Oxygen Demand (COD)	<25	0	NA	NA	NA	NA	1	mg/L	lbs.	NA	NA	NR	
c. Total Organic Carbon (TOC)	4.64	2.4	NA	NA	NA	NA	1	mg/L	lbs.	NR	NR	NR	
d. Total Suspended Solids (TSS)	14	74	1.4	74	4	21	12	mg/L	lbs.	NR	NR	NR	
e. Ammonia (as N)	0.23	1.2	NA	NA	NA	NA	1	mg/L	lbs.	NR	NR	NR	
f. Flow	VALUE	0.793	VALUE	20.224	VALUE	19.211	12	MG		VALUE	NR	NR	
g. Temperature (winter)	VALUE	11.7	VALUE	11.7	VALUE	NA	12	°C		VALUE	NR	NR	
h. Temperature (summer)	VALUE	27.9	VALUE	27.9	VALUE	NA	12	°C		VALUE	NR	NR	
i. pH	MINIMUM	6.89	MAXIMUM	7.35	MINIMUM	7.35	12	STANDARD UNITS					

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.													
1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT				4. UNITS		5. INTAKE (optional)		b. NO. OF ANALYSES		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS		a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS							
a. Bromide (24959-67-9)		X	<0.200	0	NA	NA	NA	1	mg/L	lbs.	NR	NR	
b. Chlorine, Total Residual		X	<QL	0	NA	NA	NA	12	mg/L	lbs.	NR	NR	
c. Color	X		71	NA	NA	NA	NA	1	CU	NA	NR	NR	
d. Fecal Coliform		X	<1	0	NA	NA	NA	1	cl/100ml	NA	NR	NR	
e. Fluoride (16984-48-8)		X	<0.4	0	NA	NA	NA	1	mg/L	lbs.	NR	NR	
f. Nitrate-Nitrite (as N)	X		0.90	4.7	0.90	4.7	0.46	12	mg/L	lbs.	NR	NR	

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'		3. EFFLUENT						4. UNITS		5. INTAKE (optional)				
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES	
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS		
g. Nitrogen, Total Organic (as N) (7723-14-0)	X		1.76	9.24	1.76	9.24	1.76	9.24	1.14	6.0	12	mg/L	lbs.	NR	NR
h. Oil and Grease		X	<5.0	0	NA	NA	NA	NA	NA	NA	1	mg/L	lbs.	NR	NR
i. Phosphorus (as P), Total (7723-14-0)		X	<0.20	0	NA	NA	NA	NA	NA	NA	12	mg/L	lbs.	NR	NR
j. Radioactivity															
(1) Alpha, Total		X	<3.00	0	NA	NA	NA	NA	NA	NA	1	pCi/L	NA	NR	NR
(2) Beta, Total		X	<4.00	0	NA	NA	NA	NA	NA	NA	1	pCi/L	NA	NR	NR
(3) Radium, Total		X	<1.00	0	NA	NA	NA	NA	NA	NA	1	pCi/L	NA	NR	NR
(4) Radium 226, Total		X	<1.00	0	NA	NA	NA	NA	NA	NA	1	pCi/L	NA	NR	NR
k. Sulfate (as SO ₄) (14808-79-8)	X		19.5	102	NA	NA	NA	NA	NA	NA	1	mg/L	lbs.	NR	NR
l. Sulfide (as S) (4972-83-6)		X	<0.12	0	NA	NA	NA	NA	NA	NA	1	mg/L	lbs.	NR	NR
m. Sulfite (as SO ₃) (14265-45-3)	X		5.12	27	NA	NA	NA	NA	NA	NA	1	mg/L	lbs.	NR	NR
n. Surfactants		X	<0.20	0	NA	NA	NA	NA	NA	NA	1	mg/L	lbs.	NR	NR
o. Aluminum, Total (7429-90-5)		X	<30	0	NA	NA	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR
p. Barium, Total (7440-39-3)	X		28	0.012	NA	NA	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR
q. Boron, Total (7440-42-6)	X		99	0.52	NA	NA	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR
r. Cobalt, Total (7440-48-4)		X	<1.00	0	NA	NA	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR
s. Iron, Total (7439-89-6)	X		1240	6.52	NA	NA	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR
t. Magnesium, Total (7439-95-4)	X		3070	16	NA	NA	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR
u. Molybdenum, Total (7439-98-7)		X	<10	0	NA	NA	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR
v. Manganese, Total (7439-96-5)	X		99.7	0.0525	NA	NA	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR
w. Tin, Total (7440-31-5)		X	<20	0	NA	NA	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR
x. Titanium, Total (7440-32-8)		X	<10	0	NA	NA	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
VA0091405	001

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe is discharged in concentrations of 100 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4-dinitrophenol, or 2-methyl-4, 6-dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS													
1M. Antimony, Total (7440-36-0)			X	<1.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
2M. Arsenic, Total (7440-38-2)			X	<1.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
3M. Beryllium, Total (7440-41-7)			X	<0.1	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
4M. Cadmium, Total (7440-43-6)			X	<0.00005	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
5M. Chromium, Total (7440-47-3)			X	<0.001	0	NA	NA	NA	1	ug/L	lbs	NR	NR
6M. Copper, Total (7440-50-6)		X		3.00	0.02	NA	NA	NA	1	ug/L	lbs.	NR	NR
7M. Lead, Total (7439-92-1)			X	<0.10	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
8M. Mercury, Total (7439-97-6)			X	<0.10	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
9M. Nickel, Total (7440-02-0)		X		2.65	0.14	NA	NA	NA	1	ug/L	lbs.	NR	NR
10M. Selenium, Total (7782-49-2)			X	<0.50	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
11M. Silver, Total (7440-22-4)		X		0.32	0.002	NA	NA	NA	1	ug/L	lbs.	NR	NR
12M. Thallium, Total (7440-28-0)			X	<10	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
13M. Zinc, Total (7440-68-6)		X		9.6	0.050	NA	NA	NA	1	ug/L	lbs.	NR	NR
14M. Cyanide, Total (57-12-5)			X	<10	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
15M. Phenols, Total			X	<0.05	0	NA	NA	NA	1	ug/L	lbs.	NR	NR

DIOXIN													
2,3,7,8-Tetra-chlorodibenzo-P-Dioxin (1784-01-6)				DESCRIBE RESULTS : Naiver was granted by DEQ on 08/06/2011.									

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)		2. MARK "X"		3. EFFLUENT				4. UNITS		5. INTAKE (optional)		
a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	b. NO. OF ANALYSES
GCMS FRACTION - VOLATILE COMPOUNDS												
1V. Acrolein (107-02-8)		X	<50.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
2V. Acrylonitrile (107-13-1)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
3V. Benzene (71-43-2)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
4V. Bis (Chloromethyl) Ether (542-38-1)			DELISTED	02-4-81	ANALYSIS	NOT	REQUIRED	FOR	THIS			
5V. Bromoform (75-25-2)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
6V. Carbon Tetrachloride (56-23-5)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
7V. Chlorobenzene (108-90-7)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
8V. Chlorodibromomethane (124-48-1)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
9V. Chloroethane (75-00-3)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
10V. 2-Chloroethylvinyl Ether (110-75-8)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
11V. Chloroform (67-68-3)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
12V. Dichlorobromomethane (75-27-4)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
13V. Dichlorodifluoromethane (75-71-8)			DELISTED	01-8-81	ANALYSIS	NOT	REQUIRED	FOR	THIS			
14V. 1,1-Dichloroethane (75-34-3)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
15V. 1,2-Dichloroethane (107-06-2)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
16V. 1,1-Dichloroethylene (75-35-4)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
17V. 1,2-Dichloropropane (78-87-5)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
18V. 1,3-Dichloropropene (542-75-6)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
19V. Ethylbenzene (100-41-4)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
20V. Methyl Bromide (74-83-9)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
21V. Methyl Chloride (74-87-3)		X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-09-2)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
23V. 1,1,2,2-Tetrachloroethane (79-34-5)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
24V. Tetrachloroethylene (127-18-4)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
25V. Toluene (108-88-3)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
26V. 1,2-Trans-Dichloroethylene (156-60-5)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
27V. 1,1,1-Trichloroethane (71-55-6)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
28V. 1,1,2-Trichloroethane (79-00-5)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
29V. Trichloroethylene (79-01-6)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
30V. Trichlorofluoromethane (75-69-4)															
31V. Vinyl Chloride (75-01-4)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
2A. 2,4-Dichlorophenol (120-83-2)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
3A. 2,4-Dimethylphenol (105-67-9)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
4A. 4,6-Dinitro-O-Cresol (534-52-1)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
5A. 2,4-Dinitrophenol (51-28-5)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
6A. 2-Nitrophenol (88-75-5)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
7A. 4-Nitrophenol (100-02-7)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
8A. P-Chloro-M-Cresol (59-50-7)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
9A. Pentachlorophenol (87-86-5)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
10A. Phenol (108-95-2)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
11A. 2,4,6-Trichlorophenol (88-05-2)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR

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CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"		3. EFFLUENT				4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION (2) MASS		b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION (2) MASS		d. NO. OF ANALYSES	e. CONCENTRATION	f. MASS
										a. LONG TERM AVERAGE VALUE (1) CONCENTRATION (2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS											
1B. Acenaphthene (83-32-9)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
2B. Acenaphthylene (208-98-8)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
3B. Anthracene (120-12-7)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
4B. Benzidine (92-87-5)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
5B. Benzo (a) Anthracene (56-55-3)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
6B. Benzo (a) Pyrene (50-32-8)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
7B. 3,4-Benzofluoranthene (205-99-2)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
8B. Benzo (ghi) Perylene (191-24-2)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
9B. Benzo (k) Fluoranthene (207-08-8)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
10B. Bis (2-Chloroethoxy) Methane (111-81-1)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
11B. Bis (2-Chloroethyl) Ether (111-44-4)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
12B. Bis (2-Chloroisopropyl) Ether (102-80-1)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
14B. 4-Bromophenyl Phenyl Ether (101-55-3)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
15B. Butyl Benzyl Phthalate (85-98-7)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
16B. 2-Chloronaphthalene (81-59-7)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
18B. Chrysene (218-01-9)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
19B. Dibenzo (a,h) Anthracene (53-70-3)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
20B. 1,2-Dichlorobenzene (95-50-1)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.
21B. 1,3-Dichlorobenzene (541-73-1)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT				4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)													
22B. 1,4-Dichlorobenzene (108-46-7)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
23B. 3,3-Dichlorobenzidine (81-84-1)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
24B. Diethyl Phthalate (84-66-2)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
25B. Dimethyl Phthalate (131-11-3)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
26B. Di-N-Butyl Phthalate (84-74-2)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
27B. 2,4-Dinitrotoluene (121-14-2)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
28B. 2,6-Dinitrotoluene (605-20-2)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
29B. Di-N-Octyl Phthalate (117-94-0)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
30B. 1,2-Diphenylhydrazine (as Azo-benzene) (122-86-7)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
31B. Fluoranthene (206-44-0)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
32B. Fluorene (86-73-7)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
33B. Hexachlorobenzene (118-74-1)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
34B. Hexachlorobutadiene (87-68-3)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
35B. Hexachlorocyclopentadiene (77-47-4)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
36B. Hexachloroethane (67-72-1)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
38B. Isophorone (78-59-1)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
39B. Naphthalene (91-20-3)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
40B. Nitrobenzene (98-95-3)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
41B. N-Nitrosodimethylamine (62-75-9)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
42B. N-Nitrosod-N-Propylamine (621-64-7)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR

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CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)		2. MARK 'X'		3. EFFLUENT				4. UNITS		5. INTAKE (optional)			
a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS					(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)													
43B. N-Nitrosodiphenylamine (68-30-8)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
44B. Phenanthrene (85-01-6)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
45B. Pyrene (129-00-0)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
46B. 1,2,4-Trichlorobenzene (120-82-1)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
GC/MS FRACTION - PESTICIDES													
1P. Aldrin (309-00-2)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
2P. α-BHC (319-84-6)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
3P. β-BHC (319-85-7)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
4P. γ-BHC (59-88-6)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
5P. δ-BHC (319-86-8)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
6P. Chlordane (57-74-9)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
7P. 4,4'-DDT (50-29-3)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
8P. 4,4'-DDE (72-55-6)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
9P. 4,4'-DDD (72-54-6)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
10P. Dieldrin (80-57-1)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
11P. α-Endosulfan (115-28-7)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
12P. β-Endosulfan (115-26-7)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
13P. Endosulfan Sulfate (103-107-8)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
14P. Endrin (72-20-8)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
15P. Endrin Aldehyde (7421-93-4)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR
16P. Heptachlor (78-44-8)			X	<10.0	0	NA	NA	NA	1	ug/L	lbs.	NR	NR

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EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
VA0091405	001

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)					
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - PESTICIDES (continued)															
17P. Heptachlor Epoxide (1024-57-3)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
18P. PCB-1242 (63468-21-6)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
19P. PCB-1254 (11097-69-1)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
20P. PCB-1221 (11104-28-2)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
21P. PCB-1232 (111141-18-5)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
22P. PCB-1248 (12872-29-6)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
23P. PCB-1260 (11098-92-5)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
24P. PCB-1016 (12874-11-2)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR
25P. Toxaphene (8001-35-2)			X	<10.0	0	NA	NA	NA	NA	1	ug/L	lbs.	NR	NR	NR

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Lake Gaston WTP VPDES Permit Operations and Maintenance Manual

Introduction

The purpose of this manual is to document operating procedures established for the Lake Gaston Water Treatment Plant (LGWTP) that are necessary to achieve compliance with the Virginia Department of Environmental Quality's (DEQ's) VPDES permit. The following sections include a description of the process operation at the LGWTP, a discussion of the permitted outfall location and treatment and disposal of plant effluent and documentation of testing, analysis, and recording procedures. Several items included in Appendices are a list of emergency contacts, procedures for reporting and responding to spills, a copy of the VPDES permit, and copies of all reporting forms.

Treatment System Operation

Drinking water process treatment for the LGWTP includes straining, rapid mix, flocculation, membrane particle removal, manganese removal, chlorine, chloramine disinfection, and solids handling. The solids handling facilities include gravity thickening and centrifuge dewatering. Most of the process treatment equipment is housed in one building called the Membrane Building (MB).

Raw Water Facilities

The main raw water source for the new LGWTP is the Lake Gaston/ Western Branch System. Raw water from Lake Gaston is piped to the Western Branch Lakes which are located in Norfolk. Raw water from the Western Branch Lakes is currently pumped to the City of Norfolk's water treatment system. The City of Norfolk pumps water from the Western Branch Pump Station to the LGWTP. In addition, Western Branch Lakes water is temporarily stored in the City of Chesapeake's In-Town Lakes which serves as a supplemental source of raw surface water to the LGWTP.

In addition to the raw surface water treated by the LGWTP, well water withdrawn from the two existing Western Branch wells, located adjacent to the LGWTP site, is disinfected separately and then blended with disinfected surface water. Finished water chemicals designed to control finished water corrosivity and pH are added downstream of the well water blend point.

During normal, non-drought conditions, the Western Branch Lakes are fed by Lake Gaston and, to a lesser extent, the Western Branch watershed. This blend is raw water contains relatively low levels of total organic carbon (TOC), color, and alkalinity. When drought conditions occur, the Lake Gaston/ Western Branch System are supplemented by the Norfolk Emergency Wells, the Nottaway River and Blackwater River. Under these conditions, the TOC and color level increase significantly and the system experiences swings in pH and alkalinity.

Rapid Mix/Flocculation

The initial plant process treatment includes one train of headworks facilities. The train contains an in-line automatic backwash strainer and a rapid mixer, as well as flow control devices. The rapid mixer is an in-line mechanical mixer designed to process maximum plant flows at a velocity of 5 ft/s. Chemical addition points for ferric chloride, sodium hydroxide, and sulfuric acid are provided upstream of the rapid mixer for raw water coagulation and pH adjustment.

Two-stage flocculation follows rapid mix and precedes membrane filtration. A vertical propeller flocculator is provided for each flocculation basin. Powdered Activated Carbon (PAC) is added upstream of the flocculation basin for taste and odor control.

Membrane Filtration

The membrane filtration process consists of four trains of ultrafiltration membranes submerged in covered concrete basins. When all trains are in service, the membranes are capable of processing 8 MGD of flow. Each train has a nominal output capacity of 1.9 MGD at 95 percent recovery.

The membranes were supplied as a package system that includes permeate pumps, aeration blowers, back pulse tank, clean-in place tanks, and other associated mechanical components. The permeate pumps are centrifugal vacuum pumps that convey water through the membranes and on through the rest of the treatment processes. Single-stage centrifugal blowers supply air for scouring the membranes to prevent clogging.

Two types of membrane cleaning procedures are used. Maintenance cleaning is performed on an as-needed basis, at intervals up to once per day per basin. During a maintenance clean, the membranes are flushed with sodium hypochlorite or citric acid for 2 minutes. A more thorough cleaning, called "recovery cleaning" is performed on each basin once every 30 days. In a recovery clean, the membranes are flushed with high concentrations of sodium hypochlorite or citric acid. The basin is then filled and allowed to "soak" for a specified amount of time.

Manganese Removal

Two horizontal pressure filter Manganese Contactors provide manganese removal. The Contactors are located downstream of the Membranes and are designed to process maximum plant flows with one contactor backwashing. Along with the Manganese Contactors, two vertical centrifugal and two rotary positive displacement blowers are provided for backwashing. Finished water is used for backwashing.

The hydraulic detention time in the Manganese Contactors is used as part of the disinfection contact time. Therefore, sodium hypochlorite is dosed upstream of the contactors at an appropriate concentration to achieve both disinfection and manganese oxidation.

Disinfection

A dedicated chlorine Disinfection Pipeline is provided downstream of the manganese contactors to provide the remaining required contact time for disinfection. Sodium hypochlorite is used to achieve 0.5 log Giardia inactivation. The main sodium hypochlorite addition point is upstream of the Manganese Contactors. Two other hypochlorite addition points, one located downstream of the Manganese Contactors and one located on the finished water downstream of the Finished Water Storage Tank, are used to fine tune the chlorine concentration as needed.

Chloramines serve as the residual disinfectant for the distribution system. Ammonia is added at the downstream end of the Disinfection Pipeline where it combines with chlorine to form chloramines. The ammonia is added at the point in the Disinfection Pipeline where the fittings provide maximum head loss and mixing energy.

Well water from the Western Branch well system is disinfected with sodium hypochlorite in the well water pipeline as it enters the membrane building. The disinfected well water is then added to the Disinfection Pipeline at a point upstream of ammonia addition.

Finished Water Treatment and Pumping

The finished water is conditioned with sodium hydroxide for pH adjustment and zinc orthophosphate for corrosion control. Fluoridation is achieved through use of the natural fluoride in the groundwater from the Western Branch Well Number 1 or 3. The combined flows are stored in a 2 MG Finished Water Storage tank. Additional storage is provided at the ASR and Portsmouth Area Expansion Tank (PAE). Vertical turbine centrifugal can pumps are used to pump finished water to the distribution system. Three finished water storage pumps and two manganese contactor backwash pumps are located at the Finished Water Pump Station.

Chemical Storage and Pumping

The following chemicals are used at the Lake Gaston plant:

- Ammonia
- Citric Acid
- Ferric Chloride
- Polymer
- Powered Activated Carbon
- Sodium Bisulfite
- Sodium Hydroxide
- Sodium Hypochlorite
- Zinc Orthophosphate

The chemical feed pumping systems are located in the MB. Most chemicals are stored in tanks located outside in containment areas adjacent to the MB. Chemical storage capacity is provided for up to 20 MGD of plant flow capacity. Two sodium hypochlorite tanks will be located in a separate, air-conditioned room within the MB. Sodium Bisulfite and Polymer for the dewatering operation are stored in 1,500 gallon polyethylene tank and 300 gallon totes, respectively inside the MB.

Waste Treatment

Liquid streams including membrane concentrate, strainer backwash, sanitary decant including sumps inside the MB, and neutralized cleaning solution are treated on site with sludge thickening and centrifuge dewatering. The centrate is returned to the sludge thickener. The sludge thickener overflow along with the manganese contactor backwash waste basin drains, backpulse waste, and chemical containment areas are sent to the plant waste basin for flow equalization and further solids separation. Plant effluent pumps convey the liquid effluent from the plant waste basin to Outfall #001, an unnamed tributary to Goose Creek. The plant effluent is dechlorinated and aerated before it is discharged to Outfall #001.

The centrifuge and the associated polymer equipment are housed in the MB. Along with the centrifuge, the dewatering area includes two progressing cavity centrifuge feed pumps; polymer feed equipment, and truck loading area. Dewatered solids are emptied from the centrifuge into roll-off containers for delivery to a solids disposal site.

Routine and Emergency Maintenance

Preventive and corrective maintenance at the Lake Gaston Water Treatment Plant will be performed by the same Maintenance Staff who conduct maintenance at the Northwest River Water Treatment Plant. Routine preventive maintenance will be based on manufacturer's recommendations. The manufacturer's maintenance recommendations are included in the Operations and Maintenance (O&M) Manuals for each piece of equipment. There are approximately 40 volumes of equipment-specific manuals stored in various locations in the Lake Gaston Water Treatment Plant for reference.

The Operations staff at the Lake Gaston Water Treatment Plant will conduct daily inspections of equipment and look for such items such as:

- Leakage from pumps and piping
- Excessive noise or vibration
- Pumps not maintaining dosages
- Air leaks in air systems

If equipment problems occur that require corrective maintenance, the operations staff will submit a work order request to the Maintenance Staff will correct the problem.

Wastewater and/or Stormwater Collection

Sanitary waste is treated in a two-stage septic system located on the Lake Gaston site. The effluent from the septic tank is conveyed through a grinder and then on to the sludge thickener. The flow discharge from the septic tank is disinfected with sodium hypochlorite. The thickened residuals removed from the bottom of the sludge thickener are dewatered in a centrifuge and hauled to the City's disposal site. The sludge thickener overflow along with the manganese contactor back wash is sent to the plant waste basin for flow equalization and further solids separation. Plant effluent pumps convey the liquid effluent from the plant waste basin to Outfall #001, an unnamed tributary to Goose Creek. The plant effluent is dechlorinated and aerated before it is discharged to Outfall #001.

The site stormwater is discharged to a ditch located on the property of the Lake Gaston Plant. The ditch that the stormwater empties into eventually combines with the plant effluent discharge and the combined discharges flow into an unnamed tributary of Goose Creek.

Treatment and Disposal/ Discharge

The LGWTP is designed to achieve a net surface water treatment recovery of 95-percent (i.e., 8.0 MGD raw source flow will yield 7.6 MGD of finished water). The remaining 5 percent of the influent flow, designated membrane concentrate, is discharged continuously to the sludge thickener. Here, particles contained in the flow stream are allowed to settle out of solution. Overflow from the sludge thickener is discharged to the plant waste basin, where supplemental setting and blending with other waste streams will occur. Thickened residuals removed from the bottom of the sludge thickener are dewatered in a centrifuge and hauled to the City's existing residuals disposal site, located near the existing Northwest River WTP.

Other treatment process waste flow streams that periodically contribute to the plant effluent flow stream include the following:

- The Manganese Contactors are backwashed every 21 days for the two contactors. Waste backwash water, containing particulate manganese particles, flows by gravity to the plant waste basin, where the particles are settled out of solution. Supernatant from the plant waste basin is discharged to the effluent pump station.
- The submerged membranes used to treat the surface water are periodically cleaned with citric acid or sodium hypochlorite to remove any foulants from the surface of the membranes and restore their design operating flux. Each of the four membranes trains requires cleaning event; the membrane train is soaked in a solution of either citric acid or sodium hypochlorite. At the end of the required soaking period, the spent cleaning and chlorine concentrations are neutralized with sodium hydroxide and/ or sodium bisulfite. Following neutralization, the neutralizing, the neutralized cleaning solution is pumped to the Sludge Thickener, where solids are settled out of solution. Overflow from the sludge thickener is discharged to the Plant Waste Basin where second settling occurs.

- The sanitary waste produced on site is treated in a two stage septic tank system before being pumped at a continuous rate of 11 GPM to the sludge thickener. The treated flow discharged from the septic tanks is disinfected with sodium hypochlorite on its way to the sludge thickener. Once in the sludge thickener, any remaining solids are removed by settling. Liquid from the sludge thickener flows to the plant waste basin and combines with other settled waste flow streams, as discussed above.
- Centrate from the residuals dewatering and residuals from the plant waste basin are recycled to the sludge thickener, where solids are removed from solution. Overflow from the plant waste basin are discharged to the effluent pump station.
- Rain water, dilute chemicals resulting from handling and storage from the chemical containment areas and the outside troughs are manually pumped to the plant waste basin. In the future a valve will be installed to divert the flow to the sludge thickener instead of the plant waste basin then to the centrifuge for a highly refined discharge.

Settled water discharged from the plant waste basin includes a combination of settled water flows associated with the various streams identified above. Any residual chlorine present in the combined waste stream discharged from the plant waste basin is neutralized with sodium bisulfite as the flow passes through the effluent pump station (located downstream of the plant waste basin). Following pumping, the combined effluent flow is aerated and then pumped to plant outfall. The effluent flow is expected to range 0.4 to 1.0 MGD, depending on how many membrane trains are in service and whether or not a contactor is being backwashed or a membrane train is being cleaned.

Permitted Outfall Locations

The permitted outfall #001 is located on the northwest corner of the plant site. The plant effluent is discharged to an unnamed tributary to Goose Creek that runs along the northwest border of the plant site.

Effluent Sampling and Preservation Procedures

All operators and laboratory personnel are trained to collect samples properly using either grab or composite methods. A grab sample is one sample collected at a particular time and place. Composite refers to a mixture of grab samples collected at the same place but at a different interval. Ice is normally used as a preservative. Acids are added to the sample upon arrival at the laboratory. Containers used are normally polyethylene plastics and borosilicate glass. Samples are promptly delivered to the laboratory with proper documentation. For dissolved metals, samples are filtered at the site using a .045 micron and acidified promptly. The Chesapeake Water Treatment Plant Laboratory strictly follows the Standard Methods or EPA protocol for sample handling and preservation.

Samples are logged into the computer using the Labworks Laboratory Information Management System (LIMS) as soon as they arrive at the laboratory. A unique number is assigned to each individual sample and all pertinent information is recorded. Samples are analyzed promptly upon arrival at the laboratory. If samples cannot be analyzed immediately, proper preservation is practiced. Samples are refrigerated at

a temperature of zero to +4°C. For all metals analysis, samples are acidified with nitric acid to a pH <2.0 and recorded.

Laboratory Testing

Analytical methods are specified in NPDWR 40 CFR 141 and 143. The method selection is based on the ability to produce quality results and the availability of the analytical equipment. A Standard Operating Procedures (SOP) Manual is available for all parameters analyzed by this Laboratory. The SOP manual is reviewed annually by the Water Quality Supervisor for accuracy and applicability.

The LGWTP Laboratory uses the following sources of analytical methodologies:

- Certification for Non-Commercial Environmental Laboratories 1AC30-45, VA Register of Regulations, Volume 24, Issue 25, August 18, 2008.
- Manual for the Certification of Laboratories Analyzing Drinking Water, EPA 815-R-05-004, January 2005
- Methods for the Determination of Inorganic Compounds in Environmental Samples, EPA/600/93/100 August 1993.
- Methods of Chemical Analysis of Water and Wastewater EPA-EMSL, Revised, March 1993
- Methods of the Determination of Metals in Environmental Samples, Supplement I, EPA /600/ R-94/111 May 1994
- Standard Methods for the Examination of Water and Wastewater, 19th, 20th, and On-Line Editions, 1997, 1998, and 2011, respectively.

The protocol for a specific method is strictly adhered to. If any modification is necessary, it is carefully studied before practicing the test. Several repeat analyses are performed to verify if results are reproducible.

For a certified parameter, the laboratory uses only approved procedures stated in Standard Methods or the EPA Guidance Manual. This is a requirement by the EPA and State for a certified laboratory.

For the contaminants that do not require certification, the laboratory uses methods other than those specified in EPA manual or Standard Methods. These methods have been checked in parallel with the approved methods (Appendix A lists the approved methodologies used by the LGWTP Lab).

For the contaminants that the City cannot perform, samples are sent to certified laboratories for analysis. Proper preservations are utilized and documented on a chain-of-custody form.

Analysis and Recording of Results

The data generated by the laboratories are entered into the computer using the LIMS program. Records such as raw data, calculations, calibrations, instrument maintenance logs, and quality control data are kept for a period of five years. Raw data is kept in either bound notebook or pre-printed forms. The data

are direct read outs from the instruments which are converted to standard units. Information about a sample can also be found in the raw data worksheet.

The Water Quality Supervisor (WQS) checks the data generated by the Lab. Data is acceptable when all quality control checks are within acceptable limits. If corrections are necessary, the samples are re-analyzed with additional QC checks. The WQS and the Water Resources Administrator review final reports.

In the event of a violation, the WQS notifies the proper authority for non-compliance sample results and requests to resample.

Submittal and Retention of Records

Records will be submitted to the Department of Environmental Quality and retained at the Northwest River Water Treatment Plant as required by the VPDES and VPA permits for both the Lake Gaston and Northwest River WTP.

Procedure for Reporting and Responding to any Spills/Overflows/Treatment Works Upsets

In the event of a chemical spill, overflow or treatment works upset, the procedure outlined in Part II of the VPDES Permit No. VA0091405, pages 3-5 is followed. The 5 day Letter (included in Appendix B) is used to report the incident to DEQ.

Person Responsible for the Above Activities

Craig Maples, Water Resource Administrator

Alexander Echols, Engineer II

Violee Deluna, Water Quality Supervisor

McKinley Cashwell III, Chief Operator

Barry Gowder, Maintenance Supervisor